Proper Acoustics

Whether it’s a recording studio, music performing arts center, an experimental research laboratory, a commercial office environment, or a hospitality space, proper acoustics is critically important. Mechanical and electronic vibration from support equipment must be anticipated and mitigated to avoid unwanted disturbances in those spaces.

System noise and vibration can be a seen as a problem during commissioning or the operation of a facility, long after it can be effectively addressed. If you can detect these problems during the design phase, you’ll improve timeliness, financial efficiency, and ultimately the success of a construction or renovation project.

This course will help you understand noise control and offer solutions to both common problems as well as the unique situations you may encounter. Learn how to measure and evaluate the effects of acoustics and vibration to achieve the required criteria and incorporate the appropriate design and construction details.

Increase your understanding of noise criteria, octave band, measuring protocol and isolation methods. Instructors in the course include practicing designers and acousticians, and industry experts in vibration isolation. The classroom lectures and discussion will be supplemented by a preview of the new performing arts center under construction on the UW–Madison campus.

Who Should Attend

- Facilities capital project managers
- Architects and mechanical engineers
- Acousticians and sound engineers
- Facilities operations and field staff
- Environmental health and safety professionals
- Construction managers and sub-contractors

Earn Continuing Education Credit

By participating in this course, you will earn 21 Professional Development Hours (PDH), 2.1 Continuing Education Units (CEU) or 21 AIA Learning Units (LU/HSW).

Instructors

Curtis Eichelberger, PE, is a Senior Staff Engineer at the Johnson Controls Design Center in York, Pa., where he is involved with the design and application of HVAC airside equipment. He has over 40 years of experience in research, engineering and application of products relating to acoustic and vibration technologies. Eichelberger is an instructor with ASHRAE, and received his bachelor’s in electrical engineering and master’s in acoustics from Penn State.

Mark P. Malkin, PE, program director for UW–Madison Engineering Professional Development, has over 25 years of combined experience in university construction project management and HVAC systems design. Mark received his bachelor’s from Cornell University and master’s in mechanical engineering from UW–Madison.

Richard H. Talaske, FASA, is the President and Principal Acoustics Consultant for TALASKE | SOUND THINKING in Oak Park, Ill. During his 38+ years as a practicing acoustical consultant, he has worked nationally and internationally on the design or evaluation of hundreds of performance facilities. He has a bachelor’s in engineering from the University of Michigan and a master’s in acoustics from Penn State.

James R. Tauby, PE, is Chief Executive Engineer for Mason Industries in Hauppauge, N.Y., working on noise and vibration control products, as well as seismic and wind restraint systems. He lectures on vibration isolation, seismic and wind restraint of mechanical systems, and elastomeric expansion joints for piping in seismic applications. He is a registered PE in 45 states, and has a bachelor’s in mechanical engineering from the University of Alabama.

James F. Yerges, PhD, PE, is Principal at Yerges Acoustics in Downers Grove, Ill., concentrating on architectural acoustics, noise and vibration control, and sound reinforcement. He has served as Visiting Lecturer at Washington University, Notre Dame, Air Force Institute of Technology and the University of Illinois at Chicago. Yerges has a PhD in mechanical engineering from UW–Madison.
Course Outline

Day 1
Welcome and Introduction
Acoustics Fundamentals and Definitions
- What are sound, noise and vibration?
- How does sound and vibration travel?
- Describe sound waves and propagation
- Range and depth of human hearing
- Frequency, amplitude and decibels
- Transmission, reflection and absorption
- Demonstration of vibration isolation

Sound and Noise Reference Measures
- The A-scale, A-weighting (dBA)
- Octave and third-octave passbands
- Noise Criteria method (NC)
- Room Criteria and others (RC)
- Quality Assessment Index (QAI)
- Hearing protection and OSHA regulations
- Local environmental noise ordinances

Architectural Sound Control
- Mass and de-coupling
- Acoustical materials
- Sound transmission (STC)
- Sound absorption (NRC)
- Insulation and baffles
- Wall partition details
- Acoustical wall panels
- Floating wood floors
- Suspended ceilings
- Window and door openings
- Barriers and screens
- Furniture systems

Day 2
Acoustic Site Specific Cases
- Office environments
- Retail and hospitality
- Factories and industrial
- Physics research laboratories
- Diagnostic imaging equipment
- Psychology testing rooms
- Sound recording studios
- Music practice booths
- Performing arts centers

UW–Madison Design Project
- Hamel Music Center (under construction)

HVAC Design Considerations
- Mechanical equipment rooms
- Reciprocating and centrifugal chillers
- Supply fan selection and blade types
- Flexible connections and silencers
- Ductwork and air distribution
- VAV systems and terminal units
- Roof-mounted unitary systems
- Location of outdoor equipment
- AMCA and AHRI standards
- Noise reduction strategies

Day 3
Mechanical Equipment Vibration
- Inertia blocks and concrete pads
- Spring isolation and pipe hangers
- Rubber in shear connections
- Thrust blocks and expansion joints
- Emergency or standby generators
- Testing and commissioning
- Demonstration of vibration isolation

Vibration Measurements
- Accelerometers and analyzers
- Site data gathering procedure
- Comparison to published data
- Interpretation of test results
- Building resonant frequencies
- Troubleshooting of problems

Seismic Restraint Requirements
- Regional specifics and concerns
- Piping, ductwork and equipment
- Ceilings, floors and structures

Evaluating Acoustics and Vibration in Buildings

October 30 – November 1, 2017 • Madison, Wisconsin
Schedule
Registration and course will be held at:
The Fluno Center
601 University Avenue
Madison, WI

Day 1
7:30 a.m. to 8:00 a.m. Registration
8:00 a.m. to 5:00 p.m. Class

Day 2
8:00 a.m. to 5:00 p.m. Class

Day 3
8:00 a.m. to 3:30 p.m. Class

Breakfast, midmorning and midafternoon refreshment breaks
and noon lunches will be provided.

Have Questions?
Call toll free 800-462-0876 and ask for
Program Director: Mark Malkin
mmalkin@wisc.edu, 608-263-3371

Program Associate: Maggie Richardson
margaret.richardson@wisc.edu, 608-262-2068
or email custserv@epd.wisc.edu

General Information
Fee Covers Notebook, break refreshments, lunches, certificate,
continuing education credits (CEU/PDH) and rosters.

Cancellation If you cannot attend please notify us at least
seven days prior to the course start, and we will refund your
fee. Cancellations received after that date and no-shows are
subject to a $150 administrative fee per course. You may enroll
a substitute at any time before the course starts.

Location This course will be held at the Fluno Center,
601 University Avenue, Madison, WI.

Accommodations
Fluno Center
(rates starting at $149/night)
877-77-FLUNO or 608-441-7117
Room requests after 9/29/17 will be subject to availability.

Enroll Today!
Internet: epd.wisc.edu/RA01532
Phone: 800-462-0876 or 608-262-1299 (TDD 265-2370)
Fax: 800-442-214 or 608-265-3448
Mail to: The Pyle Center, Attn: Engineering Registration
702 Langdon Street
Madison, Wisconsin 53706

Course Information
To enroll, or for complete course schedule, instructor
biographies, cancellation policies, discounts
and other information, visit epd.wisc.edu/RA01532.

Please enroll me in
❑ Evaluating Acoustics and Vibration in Buildings Course
  #S644 October 30 – November 1, 2017 in Madison,
  Wisconsin
  Fee $1595
❑ I cannot attend at this time, please send me brochures
  on future courses.

Personal Information (Please print clearly.)

Name__________________________________________
Title____________________________________________
Company________________________________________
Address_________________________________________
City/State/Zip____________________________________
Phone (______)_______________________________
Email___________________________________________

Billing Information
❑ Bill my company ❑ P.O. or check enclosed (Payable in U.S. funds to UW–Madison)
❑ MasterCard ❑ VISA ❑ American Express

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What’s Next Starts Now epd.wisc.edu/RA01532